

# Near Real-time Advisory Thread

## Assessment

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# Near Real-time Advisory Thread

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# 1. Introduction

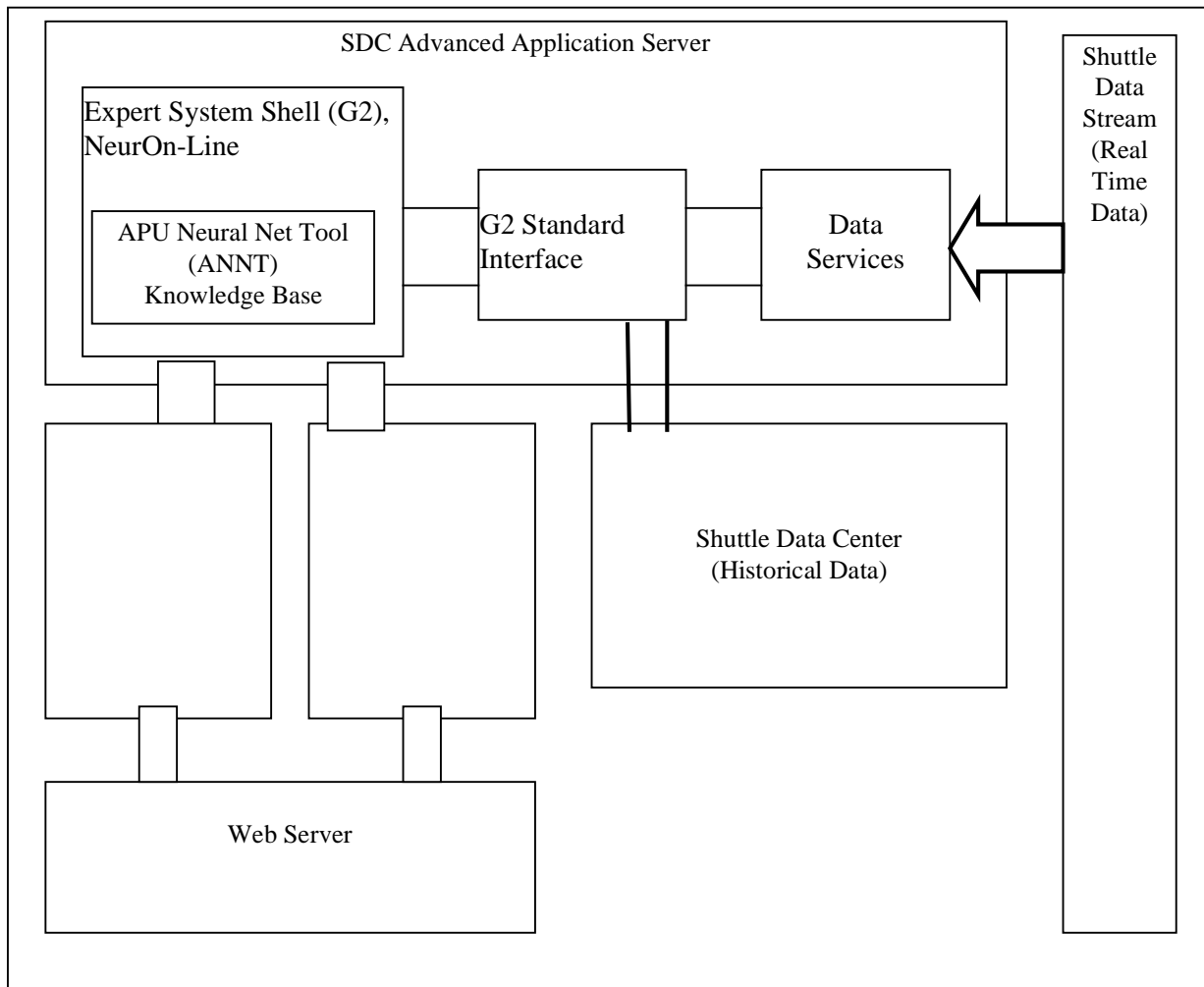
## 1.1 Near Real-time Advisory Thread Overview.

This thread supports advisory system capabilities for the CLCS Support Workstation and the Office Environment. The plan is for the UNIX based advisory systems to run in the Shuttle Data Center on the Advanced Application Server. The user would then invoke an X-Terminal to the Application from the Support Workstation or from the Office. There are some concerns regarding this implementation's effect on the performance of the individual advisory systems. There are also some concerns regarding the execution of multiple instances of these advisory systems effect on the CLCS and KSC networks. The efforts for Atlas will provide resolution to these issues. However, PSA will not be ported to the Advanced Application Server. It has been determined that the short term solution for PSA is to be accessed via an xterminal session from BASIS to the existing PSA. In the future PSA functionality will be absorbed by CLCS. SDC and ADAT will absorb the graphics plotting requirements and the RTC and SL will absorb the display requirements.

There is one Near Real-time Advisory System being implemented for Atlas that is platform independent. This is the JVIEW System. JVIEW is a JAVA based version of PCGOAL. Atlas should provide a good set of JVIEW capability to the CLCS community.

## 1.2 Near Real-time Advisory Thread Concept

The Near Real-time Advisory thread will provide continued enhancement to JView which provides a generic Near Real-time data monitoring tool for on-site and off-site use. Atlas will also see the integration of three more legacy advisory systems into CLCS bring the current total to five. The Propulsion Advisory Tool (PAT) and the APU Neural Net Tool (ANNT) were integrated into CLCS via a port to SDC and a BASIS execution during the Thor time frame. Atlas brings two more SDC ports for the High Speed Display (HSD) and the Orbiter Power Up System (OPUS). These two advisory systems will also be accessible from BASIS. The other legacy advisory system being integrated into CLCS for Atlas is the Propulsion System Advisor (PSA). PSA will be integrated through a connection to BASIS for Atlas. Future plans are to migrate PSA functionality to SL displays for the skeleton like display capability and to the Advanced Data Analysis Tool (ADAT) for the plotting capability.



## 1.3 Near Real-time Advisory Thread Specification

### 1.3.1 Statement of Work

- Integrate OPUS into CLCS
  - Provide initial deployment of OPUS system to CLCS.
  - Using CLCS data deploy Telemetry Data Services.
- Integrate High Speed Display into CLCS
  - Provide initial deployment of High Speed Display to CLCS.
  - Provide Pulse Display Capability.
- Integrate PSA into CLCS
  - Provide initial deployment of PSA system to CLCS
  - Develop capability to access from BASIS
- Continuation of JView development for CLCS

- Additional Graphing/Plotting functionality
- Support Client Multi-cast capability
- Provide a method of creating and editing new displays
- Investigate integration of SL displays with JView
- Support for CLCS Real-time Data (as opposed to CCMS Real-time Data)
- Support for CLCS Historical Data (as opposed to CCMS Historical Data)

### 1.3.2 SLS Requirements

2.2.10.2.2 The CLCS shall provide the capability to display and plot data retrieved from the SDC.

2.3.1.1 The Business and Information Network shall provide access to non-RTPS systems via a network separate from the Command and Control Network.

2.3.1.2 The Business and Information Network shall provide the software tools necessary to retrieve, display, update, and print information available on non-RTPS computing systems.

2.3.1.3 The Business and Information Network shall allow user access to the SDC for retrievals.

2.3.1.4.1 The BIN shall provide the capability to plot data from both Shuttle Data Stream and data retrieved from the SDC to the BIN Workstation CRT.

2.3.2.2 The BIN shall provide capability to host selected system, support, and applications software and file services to enable access to non-RTPS functions developed for a variety of platforms.

2.3.2.3 The BIN shall provide capability to perform protocol conversion, format changes, data transliteration, or other services to facilitate access to non-RTPS systems functions.

## 1.4 Near Real-time Advisory Thread Hardware Diagram

Not Applicable

## 1.5 Near Real-time Advisory Thread Deliverables

### Software:

Deliverable	R&D Document	Code	API Manual	Users Guide
Orbiter Power Up System	Yes	40,000 LOC	No	Hard Copy
High Speed Display	Yes	10,000 LOC	No	Hard Copy
Propulsion System Advisor	Yes	BASIS Access	No	Hard Copy
JView	Yes	18,000 LOC	No	Online

## 1.6 Near Real-time Advisory Thread Assessment Summary

This section contains the summary of the costs and labor involved in implementing the capability. It is broken into three sections. The first is a summary of the individual CI (CSCI and HWCI) labor assessments. The second is a summary of hardware costs. The third is a summary of procurement activities needed.

### 1.6.1 Labor Assessments

The total Labor Costs required to provide this capability are summarized in the following table;

No.	CSCI/HWCI Name	Atlas LM	Changes covered in
1	Near Real-time Advisory CSCI	4.5 LM	

No.	CSCI/HWCI Name	Atlas LM	Changes covered in
	- Orbiter Power Up System CSCI		
2	Near Real-time Advisory CSCI - High Speed Display CSCI	4.5 LM	
3	Near Real-time Advisory CSCI - Propulsion System Advisor	4.5 LM	
4	Near Real-time Advisory CSCI - JView	12.0 LM	
4	TCID Build & Control	0	Test Build, Load & Activation Thread
5	Data Bank	0	Test Build, Load & Activation Thread
6	Data Recording & Archival	0	Log Record & Retrieval Thread
7	Data Retrieval	0	Log Record & Retrieval Thread
	TOTAL	25.5 LM	

### 1.6.2 Software Costs

The total Software Costs required to provide this capability are summarized in the following table:

Item number	Name	Unit Cost	Qty.	Total	Assumptions
1	Gensym G2 Dev. Lic.	\$35,000	1	\$35,000	Ben Bryant working with vendor.
2					
3					
4					
5					
6					
7					
8					
9					
10					
		<b>Total:</b>		<b>\$35,000</b>	

### 1.6.3 Near Real-time Advisory Thread Procurement

This assumes that an upgrade becomes necessary.

A summary of the procurement for Near Real-time Advisory schedule is shown below:

Procurement Activity	Completion Date
Gensym G2 Dev. Licence PR	04/30/98
Receive Gensym G2 Dev. Licence	07/09/97

## 1.7 Near Real-time Advisory Thread Schedule & Dependencies

### 1.7.1 Schedule

**Atlas Schedule for Near Real-time Advisory:**

<b>Task Name</b>	<b>Start</b>	<b>Finish</b>
Atlas Assessment Kickoff (No formal kickoff held)	1/20/98	2/6/98
Concept Panel Internal Review	None	None
Concept Panel	1/20/98	2/6/98
<b>Atlas Development</b>		
Requirement Panel Internal Review	None	None
Requirement Panel	3/23/98	4/10/98 Note: Dev
Design Panel Internal Review	None	None
Design Panel	4/10/98	5/1/98
CSCI Unit Testing	7/13/98	8/3/98
CSCI Formal Integration Test	8/10/98	8/21/98
Support System Integration Test	None	None
Atlas Development Complete	3/23/98	9/30/98

**1.7.2 Dependencies**

<b>No.</b>	<b>Dependency Area</b>	<b>Dependency</b>	<b>Need Date</b>
1	Recording/Retrieval Services	Without recorded data we cannot function.	5/1/98
2	TCID Information	Without TCID information we cannot function.	5/1/98
3	Need CLCS Equiv. Definition Of SDS	Without we must continue to be connected to the CCMS SDS	5/1/98
4	Simulated CLCS SDS	Without we must continue to be connected to the CCMS SDS	6/1/98
5	Real CLCS SDS Access	Without we must continue to be connected to the CCMS SDS	7/1/98

**1.8 Near Real-time Advisory Thread Simulation Requirements**

Not Applicable.

**1.9 Near Real-time Advisory Thread Integration and System Test**

There will be no System Test for Atlas. Near Real-time Advisory will undergo System Test at some to be determined release. However, all three CSC's impacted will undergo a CIT.

**1.10 Near Real-time Advisory Thread Training Requirements****1.10.1 Training Needed**

None

**1.10.2 Training to be provided**

A one hour course will be developed to include DST and JView capability training.

**1.11 Near Real-time Advisory Thread Facilities Requirements**

None.

## 1.12 Travel Requirements

None

## 1.13 Near Real-time Advisory Thread Action Items/Resolution

- We have an issue for Atlas as to whether we should attempt to connect to the new undefined CLCS SDS or remain connected to the current CCMS SDS.

## 2. CSCI Assessments

### 2.1 CSCI Near Real-time Advisory Assessment

#### CSC Orbiter Power Up System Work Required

For Atlas the OPUS will be integrated into CLCS via a port to the SDC. Connections to SDC historical data will be created as well as interfaces to CCMS SDS and CLCS SDS if it becomes available.

#### CSC High Speed Display Work Required

For Atlas the HSD will be integrated into CLCS via a port to the SDC. Connections to SDC historical data will be created as well as interfaces to CCMS SDS and CLCS SDS if it becomes available.

#### CSC Propulsion System Advisor Work Required

In Atlas PSA will be integrated into CLCS through the BASIS. This may require some small coding effort for PSA. Other PSA work will involve creating a list of requirements currently in PSA that do not exist in ADAT and getting them placed into the "Future Requirements" section of ADAT.

#### CSC JView

In Atlas JView will create an interface to multi-cast data as well as additional graphing and plotting features. An editor will be built to allow users to create new JView displays. Assuming the CLCS SDS is defined and available in time, JView will connect to it. JView will also analyze the potential for interfacing and distributing SL displays over the net in conjunction with JView's web based data service function.

#### CSCI Assessment

CSC Name	CSC Labor (LM)	% of CSC
OPUS	4.5 LM	100
HSD	4.5 LM	100
PSA	4.5 LM	100
JView	12 LM	100

#### Basis of estimate

OPUS will require one developer for 4 1/2 months in order to fulfill its Atlas requirements.  
HSD will require one developer for 4 1/2 months in order to fulfill its Atlas requirements.  
PSA will require one developer for 4 1/2 months in order to fulfill its Atlas requirements.  
JView will require two developers for six months in order to fulfill its Atlas requirements.

## Documentation

Document Type	New/Update	Number of Pages
Requirements and Design Documentation OPUS	Update	35 pages
Users Guide	Update	40 pages
API Interface Document	None	
Interface Design Document	None	
Test Procedure	Update	40 pages
Requirements and Design Documentation HSD	Update	35 pages
Users Guide	Update	40 pages
API Interface Document	None	
Interface Design Document	None	
Test Procedure	Update	40 pages
Requirements and Design Documentation JView	Update	35 pages
Users Guide	Update	40 pages
API Interface Document	None	
Interface Design Document	None	
Test Procedure	Update	40 pages

## Assumptions

- Near Real-time Advisory will not execute from a CLCS Command Workstation for Atlas.

## Open Issues

- ERP #76 - CLCS SDS Format Definition

CLCS SDS definition and availability is a concern in regards to connecting these Near Real-time Advisory Systems to it for Atlas.

## 3. HWCI Assessments

None

## 4. COTS Products Dependencies

### 4.1 SW Products Dependency List

Product Name	Quantity Needed	Need Date
Gensym G2 Dev. Lic.	1	4/30/98

### 4.2 HW Products Dependency List

No purchases are necessary. SDC will be utilized.